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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,412	10/31/2003	Debra R. Reinhart	KSC-12246-2	5887
7590	02/01/2005		EXAMINER	
Randall M. Heald Patent Counsel, NASA John F. Kennedy Space Center Mail Code: CC-A Kennedy Space Center, FL 32899			MICHELL, KATHERINE W	
			ART UNIT	PAPER NUMBER
			3677	
			DATE MAILED: 02/01/2005	

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/701,412	REINHART ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Katherine W. Mitchell	3677

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 1/18/2005.

2a) This action is FINAL.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1 and 27-38 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1 and 27-38 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on NOT APPLICABLE is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3 sheets</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

***Administrative Matters***

- I. As noted in the Interview Summary mailed 1/18/2005, the restriction of this case was in error, as it was based on the original claims and not the claims amended by preliminary amendment. Examiner apologizes for the error.
- II. As noted in the Interview Summary mailed 1/18/2005, applicant should review this case and verify that there is a valid non-publication request if one is still desired, as it appears to examiner that the Office has withdrawn the non-publication request. However, since this is a continuation of a patented case, this may be a moot point.

***Specification***

The disclosure is objected to because of the following informalities: In the first line, priority should refer to US Patent 6664298 dated 12/16/2003, not the serial number 09/972296.

Appropriate correction is required.

***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6664298. Although the conflicting claims are not identical, they are not patentably distinct from each other because USP 6664298 includes all the elements of pending claim 1. USP 6664298 includes specific ranges of all the elements in pending claim 1, and thus obviously includes the broad categories also.

### ***Claim Objections***

3. Claim 1 is objected to because of the following informalities: Claim 1 includes a "zero-valent metal emulsion", but the definition of "emulsion"

e·mul·sion (ĕ-mĕl' shĕn) noun

1. A suspension of small globules of one liquid in a second liquid with which the first will not mix: *an emulsion of oil in vinegar.*<sup>1</sup>

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<sup>1</sup>Excerpted from *The American Heritage Dictionary of the English Language, Third Edition* Copyright © 1992 by Houghton Mifflin Company. Electronic version licensed from Lernout & Hauspie Speech

would indicate that applicant is claiming an emulsion including dispersed zero-valent metal particles. A more-correct wording would be –an emulsified system with zero-valent metal particles contained within the emulsified system –.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (f) he did not himself invent the subject matter sought to be patented.

5. Claims 1 and 27-38 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter. As the attached article, "In-Situ Treatment of DNAPL with Zero-Valent Iron Emulsions", presented 12 June 2001 and hereafter called –the DNAPLS Paper–, shows the same invention was disclosed with a different inventive entity including Dave Major, who is not listed as an inventor on the patent application. Examiner notes that this same rejection was overcome in the parent case, 09/972296 by a Declaration by Dr. Quinn clarifying inventorship. A new declaration filed for this case will overcome this rejection, but the Declaration in the parent case does not "transfer" to the continuing cases.

6. Claims 1 and 27-28, 30, 33-34, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al USP 5990365. Chang et al. teach a zero-valent emulsion comprising a plurality of zero-valent iron particles (col 15, lines 56-59), surfactant, oil, and water, forming an oil in water emulsion (col 16 lines 33-64). Surfactants inherently stabilize oil in water emulsions. Although the metal/iron particles in Chang are catalysts and are not consumed by any reaction, they do participate in a reaction and thus are considered reactants.

Further Re claims 30 and 36: Surfactants, including food grade surfactants, are taught by Chang et al. in col 6 line 54-col 7 line 4.

7. Claims 1 and 27-28 and 33-34 are rejected under 35 U.S.C. 102(b) as being anticipated by "Abstract: In-Situ Reductive Dehalogenation of DNAPLS by the Use of Emulsified Zero-Valent Nanoscale Iron Particles", 1999 NASA STTR Phase 1 Proposal # 990094, as found during a using www.google.com, at the website [http://www.spacepda.net/abstracts/99/sttr\\_html/02-990094.htm](http://www.spacepda.net/abstracts/99/sttr_html/02-990094.htm). Hereafter, this document will be called "DNAPLS Proposal # 990094". The DNAPLS Proposal # 990094 teaches in the Technical Abstract an emulsion or reactive system comprising an oil, water, and surfactant emulsion further including zero-valent metal particle reactants, and that the metal reactants can be zero-valent iron particles.

8. Claims 1 and 27-28 and 33-34 are rejected under 35 U.S.C. 102(a) as being anticipated by "In-Situ Treatment of DNAPL with Zero-Valent Iron Emulsions", presented 12 June 2001, hereafter called –the DNAPLS Paper–. Examiner notes this is considered by another inventive entity due to the presence of Dave Major as an author.

The DNAPLS Paper teaches an emulsion or reactive system comprising an oil, water, and surfactant emulsion further including zero-valent metal particle reactants, and that the metal reactants can be zero-valent iron particles in the Title and first two paragraphs on the first page of the paper.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 29-30 and 35-36 are rejected under 35 U.S.C. 103(a) as obvious over DNAPLS Proposal # 990094 in view of Matyjaszewski et al. US Patent 6121371.

Re claims 29-30 and 35-36: DNAPLS Proposal # 990094 as discussed above, teaches all the elements except specific surfactants. Surfactants, including those taught by applicant and food grade surfactants, are taught by Matyjaszewski et al., which teach in col 5 lines 20-56 that surfactants including polyoxyethylene sorbitan monoakyls (ICI's BRIJ® and TWEEN® surfactants) are preferred non-ionic, non-interfering surfactants. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified DNAPLS Proposal # 990094 to include polyoxyethylene sorbitan monoakyls as taught by Matyjaszewski et al. in order to use known, non-toxic, and readily available surfactants that would enhance stable emulsions without the risk of toxic or harmful to the environment chemicals, since

DNAPLS Proposal # 990094 is clearly interested in improving environmental remediation efforts.

11. Claims 29-30 and 35-36 are rejected under 35 U.S.C. 103(a) as obvious over the DNAPLS Paper in view of Matyjaszewski et al. US Patent 6121371.

Re claims 29-30 and 35-36: The DNAPLS Paper, as discussed above, teaches all the elements except specific surfactants. Surfactants, including those taught by applicant and food grade surfactants, are taught by Matyjaszewski et al., which teach in col 5 lines 20-56 that surfactants including polyoxyethylene sorbitan monoakyls (ICI's BRIJ® and TWEEN® surfactants) are preferred non-ionic, non-interfering surfactants. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the DNAPLS Paper to include polyoxyethylene sorbitan monoakyls as taught by Matyjaszewski et al. in order to use known, non-toxic, and readily available surfactants that would enhance stable emulsions without the risk of toxic or harmful to the environment chemicals, since the DNAPLS Paper is clearly interested in improving environmental remediation efforts.

12. Claims 31-32 and 37-38 are rejected under 35 U.S.C. 103(a) as obvious over the DNAPLS Paper in view of Borden et al. US Patent 6398960.

Re claims 31-32 and 37-38: DNAPLS Paper as discussed above teach all the elements except food grade vegetable oils, specifically corn oil. Borden et al. teach food grade vegetable oils and surfactants in the abstract and col 8, lines 26-36, which specify that corn oil is an acceptable oil for the emulsion, based on site and regulatory requirements. The use of a food grade vegetable oil would be an obvious design

choice, especially in view of environmental, health, and liability concerns. Similarly, corn oil would be an obvious choice of oil as it is inexpensive, readily available, and free of environmental, health, and liability concerns. Therefore, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified DNAPLS Paper to include food grade vegetable oil such as corn oil, as taught by Borden et al. since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Since the DNAPLS Paper is clearly interested in improving environmental remediation efforts, one would want to use emulsion components without the risk of toxic or harmful to the environment chemicals.

13. Claims 31-32 and 37-38 are rejected under 35 U.S.C. 103(a) as obvious over the DNAPLS Proposal # 990094 in view of Borden et al. US Patent 6398960.

Re claims 31-32 and 37-38: DNAPLS Proposal # 990094 as discussed above teach all the elements except food grade vegetable oils, specifically corn oil. Borden et al. teach food grade vegetable oils and surfactants in the abstract and col 8, lines 26-36, which specify that corn oil is an acceptable oil for the emulsion, based on site and regulatory requirements. The use of a food grade vegetable oil would be an obvious design choice, especially in view of environmental, health, and liability concerns. Similarly, corn oil would be an obvious choice of oil as it is inexpensive, readily available, and free of environmental, health, and liability concerns. Therefore, it would have been considered obvious to one of ordinary skill in the art, at the time the invention

was made, to have modified DNAPLS Proposal # 990094 to include food grade vegetable oil such as corn oil, as taught by Borden et al. since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Since the DNAPLS Proposal # 990094 is clearly interested in improving environmental remediation efforts, one would want to use emulsion components without the risk of toxic or harmful to the environment chemicals.

***Response to Arguments***

14. Although this is a first action in the case, applicant has filed arguments based on the parent case 09/972296 office actions, so examiner will briefly address these.

15. Applicant's arguments filed with the application have been fully considered but they are not persuasive. Applicant argues that Chang does not disclose that the metal particles are emulsified and that applicant claims this feature. Independent claim 1 claims a metal emulsion, which as noted above, is not clear, as metals do not emulsify. Therefore, applicant's claim 1 is taken as an emulsion with metal particles, which Chang meets. Independent claims 27 and 33 claim only that the oil in water emulsion includes a plurality of metal particles, which Chang also meets.

16. Regarding the reactive system claim (independent claim 33), Chang's emulsion includes metal particle which react to form the catalyst; thus Chang meets the reactive particle limitation.

17. Applicant is reminded that in an apparatus (composition) claim, as long as another apparatus (composition) is capable of meeting the limitation, it is considered to

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read on the claim. A limitation in the independent claims indicating that the metal particles are contained within the emulsion micelles as described on page 8, lines 4-5, was looked for in combination with the pending claim limitations during the current search and not found, and would likely be allowable.

### ***Conclusion***

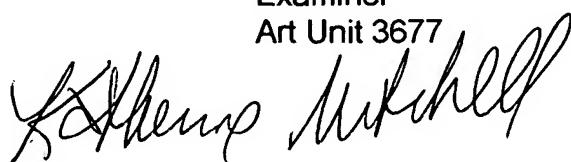
18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine W. Mitchell whose telephone number is 703-305-6713. The examiner can normally be reached on Mon - Thurs 10 AM - 8 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. J. Swann can be reached on 703-306-4115. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Katherine W Mitchell  
Examiner  
Art Unit 3677



KWM  
1/28/05